

**Notice of Allowability**

Application No.

09/901,438

Examiner

Christopher R. Magee

Applicant(s)

HASEGAWA ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE filed 03/09/2006.
2. ☒ The allowed claim(s) is/are 17-46 (renumbered as 1-30, respectively).
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 3/09/06 & 6/7/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 03/09/2006 has been entered.

### ***Election/Restrictions***

2. Claims 1-16 and 47-78 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/27/2004.
3. Applicant's election of Species B (claims 17-46) in the reply filed on 12/27/2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Priority***

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

5. The information disclosure statement (IDS) submitted on 03/09/2006 was filed after the mailing date of the Notice of Allowance on 3/23/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

***Reasons for Allowance***

6. Claims 17-46 are allowed (renumbered as 1-30, respectively).

7. The following is an examiner's statement of reasons for allowance:

This application is for an EXCHANGE COUPLING FILM AND MAGNETORESISTIVE ELEMENT USING THE SAME.

- **Claim 17** specifies an exchange coupling film, which requires:

*"wherein second imaginary line in the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer, the secondary imaginary lines each connecting the beam origin and a particular one of the diffraction spots which is given the same label in both the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer and which is located in a direction other than the layer thickness direction when viewed from the beam origin, are not coincident with each other."*

Fukuzawa et al. (US 6,338,899 B1) show a diffraction diagram of the antiferromagnetic layer with a dispersion angle of half value width in the  $\langle 111 \rangle$  direction [Fig. 20; col. 50, lines 58]. Fukuzawa et al. do not teach and/or suggest a second imaginary line in the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer, the secondary imaginary lines each connecting the beam origin and a particular one of the diffraction spots which is given

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the same label in both the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer and which is located in a direction other than the layer thickness direction when viewed from the beam origin, are not coincident with each other as claimed in the present invention.

Fuke et al. (US 5,976,713) show an electron beam diffraction pattern of the antiferromagnetic layer oriented in one plane [Figs. 8 and 9; col. 8, lines 46-50]. Fuke et al. do not teach and/or suggest a second imaginary line in the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer, the secondary imaginary lines each connecting the beam origin and a particular one of the diffraction spots which is given the same label in both the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer and which is located in a direction other than the layer thickness direction when viewed from the beam origin, are not coincident with each other as claimed in the present invention

Therefore, these features, in combination with other features of claim 17 are not anticipated by, nor made obvious over, the closest prior art of record Fukuzawa et al. (US 6,338,899 B1) and/or Fuke et al. (US 5,976,713) .

- **Claim 32** specifies an exchange coupling film, which requires:

*“wherein a particular diffraction spot indicative of a particular crystal plane, located in a direction other than the layer thickness direction, appears only in one of the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer.”*

Fukuzawa et al. (US 6,338,899 B1) show a diffraction diagram of the antiferromagnetic layer with a dispersion angle of half value width in the  $\langle 111 \rangle$  direction (Fig. 20; col. 50, lines 58). Fukuzawa et al. do not teach and/or suggest a particular diffraction spot indicative of a particular crystal plane, located in a direction other than the layer thickness direction, appears

only in one of the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer as claimed in the present invention.

Fuke et al. (US 5,976,713) show an electron beam diffraction pattern of the antiferromagnetic layer oriented in one plane [Figs. 8 and 9; col. 8, lines 46-50]. Fuke et al. do not teach and/or suggest a particular diffraction spot indicative of a particular crystal plane, located in a direction other than the layer thickness direction, appears only in one of the diffraction diagrams of the antiferromagnetic layer and the ferromagnetic layer as claimed in the present invention.

Therefore, these features, in combination with other features of claim 32 are not anticipated by, nor made obvious over, the closest prior art of record Fukuzawa et al. (US 6,338,899 B1) and/or Fuke et al. (US 5,976,713) .

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


#### ***Conclusion***


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Magee whose telephone number is (571) 272-7592. The examiner can normally be reached on M-F, 8: 00 am-4: 30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**ANGEL CASTRO**  
**PRIMARY EXAMINER**

  
Christopher R. Magee  
Patent Examiner  
Art Unit 2627

June 26, 2006  
crm